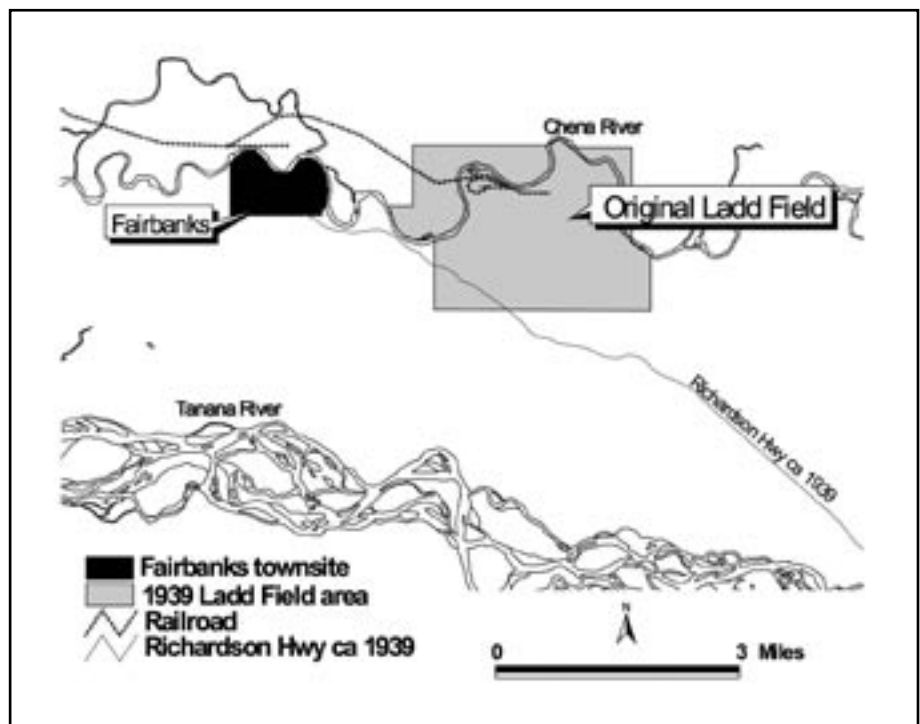


CHAPTER 3.0 Airfield Facilities

“[A] handsomely laid out, well built, and well kept place...”
– Henry Varnum Poor, 1945

Original Plans and Construction

Ladd Field was designed to be a small permanent testing facility. The original facilities included a 5,000-foot concrete runway and aircraft parking apron, nine administration and housing buildings, six technical buildings, a medical corps building, and tactical fuel storage. Utilities were placed in heated underground utilidors large enough to serve as walkways. The operations area was located inside a bend of the Chena River, and a rail spur crossed the river to connect with the Alaska Railroad terminus in Fairbanks. An access road on the south side of the river connected to the Richardson Highway near the western boundary of the airfield.



Map 2. Original Ladd Field in relation to Fairbanks.

The site layout of this permanent garrison followed the Beaux Arts design philosophy. The Beaux Arts movement featured formal planning and spacing between buildings, and bilateral symmetry of design. These elements are seen in the horseshoe-shaped layout of the original station. The center of operations was Hangar One, located adjacent to the airfield at the southern anchor of the design plan. Straight up the axis to the north across the parade ground was the commander's house. Branching off the semicircle on both sides of this house were long two-story quarters for married officers, NCOs, and bachelor officers.



Figure 4. Ladd Field operations area ca. 1941.



Figure 5. NCO quarters as they appear today.



Figure 6. Hangar One, ca. 1942. AAF photo.

An office/warehouse and power plant stood on the west side of the parade ground. On the east side was a multipurpose U-shaped building serving as Air Corps enlisted barracks, hospital, PX, and theater. The quarters were designed in a simplified neocolonial American style popular in the 1930s while the administration buildings were modern industrial.

Initially the Quartermaster Corps was the agency in charge of construction at Air Corps bases including Ladd Field. In August 1939, when the first funding became available, Quartermaster Major E.M. George arrived with a party of surveyors and engineers to supervise the work. It was very late in the season, but the surveyors and bulldozer operators got to work. They cleared a right-of-way for the rail spur, and engineers coordinated the laying of an experimental concrete runway slab. Crews also cleared a road from the Richardson Highway into the building site.

One former Fairbanks resident recalled bulldozing that first road. The new road diverged from the Richardson Highway near the boundary of Ladd Field, which at that time cut across a riverside homestead occupied by Bob and Tiny Buzby. Engineers had marked the road route with rags attached to trees. The dozer operator mucked out the trail, clearing vegetation and ground cover. Then gravel was laid. The dozer driver recalled that all in all, they had a “hell of a time” in the boggy, mosquito-infested area.¹⁶

¹⁶ Personal communication, R.D., 17 September 2002. See Price, *Homesteads on Ft. Wainwright, Alaska*, for more information on homesteads.





Figure 7. Constructing Quartermaster's party arriving in Fairbanks. Left to right: Cadet John Lee, Jr., Maj. Newton Longfellow, Maj. Dale Gaffney, Col. John Lee, Maj. E.M. George, Capt. C.W. Gibson. Kay Kennedy Aviation collection, # 91-098-837, Archives and Manuscripts, Alaska and Polar Regions Department, University of Alaska Fairbanks.



Figure 8. Ladd under construction, ca winter 1940-41. AAF photo.



Figure 9. North Post and runway, ca. 1942. Clockwise around parade ground from Hangar One on the left: Service club/bus station, power plant, quartermaster, NCO quarters, commander's house, officers' quarters, garage, BOQ, barracks/BX/hospital. Rail facilities, access road, and warehousing are visible to the west behind the QMC area.

In the spring of 1940, shipments of material arrived and the construction got underway in earnest. Up to 1,000 men were at work on the runway, hangar, warehouse and permanent quarters. Many had previously been equipment operators and laborers in the gold mines of the region, lured to Ladd by the higher pay. Some men were skilled laborers with experience operating heavy equipment and “mucking” or clearing top layers of ground. Others had done other mining jobs such as laying pipe and running giants on cleanups. One participant recalled that almost everybody from the mines came over to Ladd for the higher wages. He estimated that during the first months of the project, about 200 people were working at Ladd but that soon the number increased to

as many as 1,200 when they began pouring concrete and putting up the structures. Concrete pouring was very labor intensive. Men moved the wet concrete manually using wheelbarrows they called “cement buggies,” pushing them across planking to get the load where it was needed. When loaded, these two-wheeled wheelbarrows were so heavy that one person could barely move one.

Edmund A. Hinke arrived at Ladd in June 1940. “I landed the hardest and dirtiest job on the base,” he wrote. “I was a cement dumper, one of a crew of two. We had to dump seven sacks of cement into the hopper every few minutes. Had to wear ‘tin clothes,’ goggles and respirator all the time in the hot Fairbanks summer.” He added, “The dust was terrible and most persons assigned to the job quit immediately. This gave me the opportunity to keep asking, and getting, raises....”¹⁷

Gen. Arnold visited Ladd during that summer to observe the progress of construction. He decided to open the field for operations ahead of schedule in September 1940 as soon as the runway was ready. Many of the buildings, notably the hangar and most quarters, were still incomplete. In January 1941, the entire project was turned over to the Army Corps of Engineers as part of a national realignment of responsibility for military airfield construction. At the time of the transfer, records showed that about 80% of the overall work had been done, although only the runway was considered completely finished.¹⁸

¹⁷ Correspondence, Edmund A. Hinke, 12 September 2002.

¹⁸ Bush, 19. U.S. Army Corps of Engineers, Seattle District, Technical Center of Expertise for Preservation of Structures and Buildings, “Historic American Buildings Survey, Five Buildings At Ladd Field,” September 1996, 6-7.

Just the Facts, Fellas

A June 1940 article in *Alaska Life* magazine featured Helen Van Campen, a colorful Alaskan figure who, like so many others, was taking part in the construction craze at Ladd. A world traveler and one-time New York society writer, Helen's adventurous streak had brought her to Alaska years before, when she'd spent several years living and mining in the Alaska bush. She liked rugged pursuits and made herself at home with people from all walks of life. For a while, according to the article, she manned the personnel office at Ladd. "Bulldozer and carryall operators, gas and diesel mechanics, shovel runners, mixer men, tool sharpeners, axemen, heavy construction bosses and electricians come to her desk and talk themselves in – or out. She expertly grades their qualifications.... 'Ever drive on construction under a shovel? Where? When was this? Whom for? Okay. Do you double clutch? Thank you. No hiring for thirty days yet. Come in and say hello if you get nervous meantime.'"

"The big men and small curly grey headed woman got along. She understood them and handed out no bunk! Just facts."

– Kay Kennedy,
"Helen Van Campen,"
Alaska Life, June 1940, 20

The apron, utilidors and utility systems, commander's quarters and married officers' quarters were nearly completed. A considerable amount of work remained on the NCO quarters, BOQ, warehouse, garage, telephone system, ammunition storage, fuel storage, hospital/barracks, and hangar.

Construction continued at a busy pace that winter in spite of the difficulties of working in the sub-arctic cold. Ladd's Resident Engineer reported that ice and snow had to be scraped off lumber to allow pieces to fit properly. Workers were assigned to indoor work when temperatures dropped below minus thirty degrees. Bruce I. Staser (Brig. Gen, ret) worked for a short time at Ladd in the early winter of 1941. He later transferred to the steel gang on one of the Elmendorf Field hangars before attending the U.S. Military Academy. He described his job at Ladd as "chipping ice out of recesses in the basement wall of the hospital-to-be." He recalled that a local man he knew, Arnold Holm, worked as a riveter on Hangar One that winter. "He would hold the rivet gun under one arm and hang onto the steel with the other, barehanded. He was one tough man."¹⁹

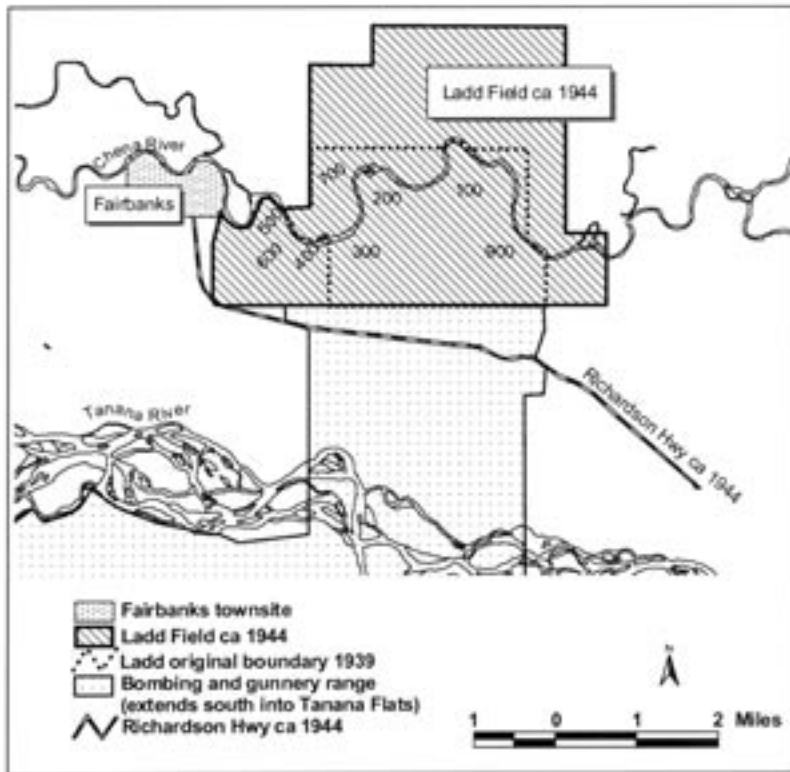
As construction continued through the summer of 1941, the number of people employed on the projects remained substantial, and opportunities opened for those who were in the right place with the right skills. H.O. Williams of Fairbanks joined the construction projects during this time. He was hired as a laborer but moved quickly into a surveying position, and then became first aid director, based out of an office in today's Bldg 1562. While he was on the survey crew, he recalled that one of the tasks was to check the runway. "[T]he runway was laid out in big square sections," he recalled, "and once a week we ran a level on every one of these

sections all the way down the runway, to see whether it was shifting." The crew also ran levels for new construction when foundations were being poured, and located corner points. He described the process: "These are big buildings," Williams explained, "and you could vary from one end to the other if you didn't have somebody with a level, an instrument there to tell you this is how high you want it here,...keep it in a level position.Once you got the foundation on, the dimensions of the steel, which were accurately machined, would take care of the leveling of the upper stories."

One by one, the buildings that made up the original Ladd Field plan were completed. The smaller quarters around the horseshoe were completed in 1941, while the more complex buildings such as Hangar One were not considered complete until 1942. The hospital/barracks building was finished in sections, with some portions being occupied in 1942.

¹⁹ Correspondence, Bruce I. Staser, 21 June, 2002.





Map 3. Ladd Field's wartime growth.

Wartime Expansion

“War caught the Alaska defense construction program far from complete,” wrote a contemporary war correspondent. “Work was speeded up, temporary construction was substituted for permanent designs, barracks building could scarcely keep up with the inrush of troops. Quiet easy-going Alaska became a feverish armed camp overnight.”²⁰ Ladd Field followed suit as it prepared to take on new roles during the war. By 1943, construction had been authorized or completed for a 280-man ground garrison camp, additional air depot housing and technical facilities for 911 enlisted men and officers, housing for Air Transport Command transients, Quartermaster truck company

housing for 110, and additional ATC housing for 2,088 personnel. Technical facilities including gasoline reserve storage tanks, four Birchwood hangars, two Kodiak T-hangars, a 4,000-foot runway extension and a second runway, as well as additional warehouses, shops and utilities, were also added to Ladd Field.²¹ Except for the runway and fuel facilities, most of the new construction was temporary.

Several people recalled the hurried pace of construction after war broke out. Ladd veteran Bill Stroecker summed it up. “[T]hat was the expansion. You started out with a new fine set of buildings, and then they got in a rush, why then they just threw up whatever they could.”

The boundaries of Ladd Field also expanded during this time from the original six-square-mile area. Land to the south was withdrawn by executive order for bombing and gunnery ranges in 1941. The cantonment area expanded north to the crest of Birch Hill, west towards Fairbanks, and slightly to the east in 1943 and 1944. As Ladd grew, new construction was added in areas on the east and west of the original horseshoe (designated as zones 100 and 200), to the southeast of the runway (zone 900), the southwest of the runway (zone 300), and west along the Chena River (zones 400, 500 and 600).

By 1945, Ladd had grown to accommodate 4,555 personnel. The airdrome itself had two runways, over 248,000 square feet of concrete aprons, 15,000 linear feet of taxiways, seven gasoline operational storage tanks and 42 bulk storage tanks,

²⁰ Waldo G. Bowman and Harold W. Richardson, et al, *Bulldozers Come First: The Story of U.S. War Construction in Foreign Lands*, (New York: McGraw-Hill, 1944) 113.

²¹ Summary from Bush, 19.



During wartime, camouflage was an important consideration. However, at Ladd Field it was an afterthought. Engineer Col. James Bush reported that cantonments originally designed in peacetime, like Ladd's, were nearly impossible to camouflage. "Because so much had been done in violation of the simple rules of camouflage, the toning down of buildings...was, in many cases, all that could be accomplished," he wrote. "Camouflage, other than toning down with paint, was

virtually impossible at the several bases, construction of which was initiated in pre-war days. The soldierly, closely grouped and peacetime layouts of these bases precluded the installation of effective camouflage."²³ Nonetheless, commanders made an attempt. Following the Pearl Harbor attack, amid rumors that Alaska would be the next target, painters were called in to provide emergency camouflage.²⁴ Roof camouflage patterns can be seen in Figure 10.

Figure 10. North Post in camouflage, ca 1944. View shows, left to right, Quartermaster building (1562), NCO quarters (1051), NCO quarters (1049), Commander's quarters (1048), Post chapel to rear (1043), WAC barracks, Officers quarters (1047), and BOQ (1045). Rex Wood photo, courtesy Randy Acord.

six reinforced ammunition magazine igloos, a runway lighting system, repair and operations facilities in multiple hangars, Air Corps supply, and miscellaneous shops and storage facilities. Support facilities included the Canol pipeline, a station hospital, motor pools, drill hall, bakery, dry cleaning, laundry, fire station, utilities, expanded rail spurs, power and heating plants, barracks, mess halls, and over 229,000 square feet of warehouse space, not including cold storage and ordnance warehouses. All in all, excluding structures such as storage tanks and magazines, Ladd Field had approximately 700 associated buildings at the end of the war²² (see diagrams in Appendix D).

Construction Challenges

Challenges faced the engineers and builders at Ladd. The permanent buildings were constructed of reinforced concrete and steel. Designed with peacetime construction conditions in mind, they required skilled construction crews and were expensive and time-consuming to erect. Hangar One, for example, was the largest hangar in Alaska, slightly larger than those constructed at Elmendorf/Fort Richardson. Other installations, most notably Fort Richardson, also had permanent construction. However, according to the Corps of Engineers, none of these facilities were "as elaborate and costly" as the buildings at Ladd.²⁵

²² Compiled from Corps of Engineers Seattle District, "Summary of Field Progress Reports," June 1945, 23 UAA Alaska Air Command collection, series III, f 23; MHR January 1945 appendix.

²³ Bush 355.

²⁴ Helen Van Campen, "They Were Alaskans," *Alaska Life*, January 1944, 129-133.

²⁵ Bush, 280-81. Re hangar size, Bush 314.

Utilidors

Imagine a subarctic airfield where temperatures get so cold that engine oil can congeal and the bottoms of rubber tires can freeze flat overnight, and where mechanics working on aircraft outdoors must be careful not to catch flesh on metal surfaces. Then imagine at this same airfield that one can walk in warmth and comfort from the main hangar to some of the mess halls and quarters without even setting foot outside, using a system of underground utilidors.

Heated utilidors were necessary to keep water pipes from freezing, and at Ladd they were also designed to serve as hallways. They were placed directly under the main sidewalks in the North Post, and the heat they gave off could also keep the sidewalks free of snow. The utilidors were quite a novelty. One visitor remarked in a bit of an exaggeration that at Ladd “you do everything underground, and don’t come up except to fly.”²⁶

Josephine Johnson remembered how the utilidors intensified the experience of winter darkness. At a time of year when it was dark before and after work, people in windowless offices would miss the day’s brief sunshine entirely. “If you went anywhere... you’d go through the utilidor so you never saw any daylight,” she remarked.

Utilidors did not reach to areas of the field that were not connected to the steam heat system, such as Quonset hut quarters. Richard Dennison, who was with the infantry, recalled that the infantrymen took pride in “roughing it” in their coal stove-heated barracks. “We were not jealous of the Air Corps and their utilidor,” he reported.

After the United States entered the war, skilled construction workers were in short supply in Alaska as men joined the armed forces or departed for defense work elsewhere. At the same time, military construction projects in the Territory were increasing. Engineer troops handled some of the projects, but luring new civilian workers to Alaska was difficult. “Contractors, industrial, and engineering firms were sending recruiters throughout the country, offering a variety of inducements,” historian Lyman Woodman wrote. “Even so, the chances were strong that a worker, successfully recruited and started toward the job, would be intercepted somewhere along the way and lured away by a rival employer.”²⁷ Not surprisingly, skilled locals continued to be in high demand for the ongoing Ladd projects. Oscar Tweisen was qualified in all trades and recalled that he worked in the shops welding fuel storage tanks. Although his draft category was 1A, he was never inducted because his construction skills were too valuable at Ladd.²⁸

Soils posed another difficulty. Some parts of the site contained permanently frozen ground called permafrost. Disturbance of the natural ground cover or the placement of a heated building on such soil causes it to melt and subside. Military construction engineers knew very little about permafrost in 1940, since few scientific studies had yet been done on the phenomenon. When Ladd’s initial runway was laid out, the

ground beneath it was excavated only to a depth of two feet. Unfortunately, a section of the first runway failed after melting permafrost caused significant heaves and sags in its surface. It was replaced after the ground was excavated to a depth of 15 feet and filled with insulating material. Some local people, especially miners who had hands-on experience with the region’s geology, had been skeptical of the engineers’ original site preparation methods, and when the runway failed, a low rumble of “we told you so” floated through their ranks.²⁹

²⁶ George Racey Jordan, *Major Jordan’s Diaries* (New York: Harcourt Brace Jovanovich, 1952; reprint Bookmailer Inc, 1958), 55.

²⁷ Woodman, 260.

²⁸ Personal communication, 25 June 2002.

²⁹ Re runway repair, Bush 20. Local lore holds that local experience in these matters was not taken into account during initial planning and construction.



The Heart of Ladd Field



Figure 11. Hangar One with B-17E, June 1942. AAC photo 33253.

Hangar One was the heart of Ladd Field and continues to be a centerpiece of Ft. Wainwright today. Completed in 1941, it was the original hangar at the field, and was Ladd's command headquarters until 1955. There was no building anywhere in Fairbanks at the time that could compare with Hangar One in immensity and appearance. Fairbanks businessman William Stroecker, a former sergeant at Ladd Field, remembered that, "[a]lmost everything was in that building....The post commander was there, and his staff, the administration....It was quite an active area. All the activity on the field stemmed from that particular location."

Architecturally, Hangar One was the monumental anchor of Ladd's permanent garrison, designed in peacetime to serve as the operational center of the cold weather test station. It was a massive structure measuring 327 feet by 271 feet, with open bay space, 268 feet by 263 feet, which could be divided in half using sliding panels. The original aircraft doors also featured huge sliding panels over three stories high, at the east and west ends of the building. Above the doors, then as now, was a sloping triangular gable whose angularity camouflaged the barrel steel truss structure of the roof supports. The angularity continued in the shape of the exterior roof covering and in the squared-off stairwell towers at each of the building's four corners. Bands of windows appeared to run the length of the north and south elevations, where shops and offices bordered the hangar bay space. The first floor contained primarily shops and supply rooms, while the second floor housed offices and records storage. On the south side, overlooking the taxiways and runway, a smaller third floor containing offices rose up from the middle section of the building. In the center, a four-sided control tower commanded a view of the airfield and the Tanana Valley.

During the Lend-Lease years of 1942-1945, the bay was divided and secured into east and west halves. The west side was a service area for the Russian detachment that accepted the transfer of Lend-Lease planes. Along the southwest side of the ground floor, the Russians had shops and a pilots' briefing room. Across the bay on the north side were more Russian shops. The east end of the hangar was the cold weather test area. In addition to its bay space, Cold Weather Test had an engineering office on the ground floor. There, they kept all the maintenance records on the test aircraft and also had a library of technical orders in loose-leaf binders containing maintenance procedures and specifications. Along the outer perimeter there were other shops for sheet metal work, radio maintenance, and other work, including a parachute and fabric shop. Parachutes often dangled from the top of nearby stairwells to dry or air out.

On the second floor, the Base Commander's office occupied the northeast corner of the hangar, overlooking the parade ground and permanent garrison. Next to the Base Commander's office and staff space was the Cold Weather Test Commander's office. It overlooked the parade ground on the west end. In that area, at least half a dozen secretaries and file clerks worked on files and reports for testing projects, typing up the handwritten test reports that the project officers submitted to headquarters. The clerical staff also kept track of the massive numbers of photographs that were produced in conjunction with the test projects.

The south side of the second floor looked out on the runways. The Operations office there coordinated flight plans and activity on the field. A Priorities and Traffic office was close by. Down the hall was the weather office. On the third floor were two communications offices. From one of these, a spiral metal stairway led up to the control tower. Russian flights had priority at the field, and a Russian operator worked up in the tower with the American crew. Russians also apparently moved freely around the Operations office area.

The offices and shops in Hangar One were full of people, and the hangar bay was filled with aircraft. Sometimes in summer, the curtain doors would be partway open, allowing daylight to flood in and mix with the electric lights in the bay. The hangar was alive with sounds and the orderly bustle of people at work. Messengers traveled from place to place, phones rang in offices, metal tools clanged against airplane components, and propeller-driven engines droned nearby as flights arrived and departed on the airfield.

Today Hangar One continues to support military aviation needs. Although Army helicopter aviation is a different operation, the massive structure continues to anchor the airfield and continues to echo with the focused energy of people engaged in the work of flying Arctic skies.



